
ENVIRONMENTAL Fact Sheet



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Stratospheric Ozone Protection – The CFC Issue

The Ozone Layer - A Shield Around the Earth

The stratospheric ozone layer is a layer of gas 10 to 35 miles above the Earth's surface that shields the Earth from harmful ultraviolet (UV-B) radiation. The ozone layer is gradually being destroyed by chemicals called chlorofluorocarbons, or CFCs (also known by the trade name Freon) and other ozone-depleting substances. CFCs have been widely used in the manufacturing of many products such as foam insulation, electronics equipment, and refrigerators. One of the single largest uses of CFCs is as a refrigerant in automobile air conditioners (see fact sheet ARD-37). When released into the air, these chemicals drift to the stratosphere where they are broken apart, freeing the chlorine molecules and allowing them to attack ozone.



Data from the National Aeronautics and Space Administration (NASA) suggests that the depletion of the stratospheric ozone layer has been occurring at a faster rate than previously anticipated. The most significant loss has occurred over the North and South poles, but also to a much lesser extent over North America, Europe, and other populated areas. The loss of the ozone layer in the upper atmosphere allows more UV-B radiation to reach the Earth. Scientists around the world agree that increased UV-B radiation could lead to an increase in skin cancer and cataracts and could damage the human immune system. It could also reduce crop yields and harm plant and animal life.

Protecting the Ozone Layer: The Montreal Protocol and the Clean Air Act Amendments of 1990

In 1987 the United States entered into an international agreement called the Montreal Protocol that was designed to phase out the production and use of ozone-depleting chemicals. Under terms of the Montreal Protocol, CFC production ceased after 1995. In addition, the U.S. Congress passed the Clean Air Act Amendments of 1990 (CAAA). Title VI of the CAAA, called "Stratospheric Ozone Protection," contains many measures to protect the ozone layer. CFCs are only regulated under federal rules: Title 40 of the Code of Federal Regulations (CFR) Part 82.

One of the major provisions of Title VI of the CAAA is the phase out of the production of Class I and Class II ozone-depleting chemicals. Class I chemicals consist of CFC 11, 12, 112, 113, and 114; Halon 1211, 1301 and 2402; carbon tetrachloride; and methyl chloride. The production phase out of Class I chemicals was completed in 1995. The Class II chemicals are the hydrochlorofluorocarbons (HCFCs), which have less of an impact on the Earth's ozone layer. Their production is being phased out between 2003 and 2030.

Title VI also prohibits the venting of CFCs to the atmosphere. Much of the ozone damage caused by air conditioning and appliance refrigerants can be prevented if service shops recover and recycle the refrigerant, instead of releasing it to the air. Title VI requires that CFCs are captured for recycling or disposal during the service and maintenance of air conditioning and refrigeration equipment. Recovery and recycling must be accomplished by a certified technician, using EPA certified equipment. Technicians become certified by attending an EPA approved training program and passing a test. Only certified technicians are allowed to purchase replacement CFCs. The ban on production of CFCs does not include the use of them. They may be used throughout their life cycle, providing they are not released to the atmosphere.

Other sections of Title VI include provisions to: 1) require warning labels for consumers on products or equipment made with or containing ozone-depleting chemicals; 2) establish a ban on non-essential products containing ozone-depleting chemicals; and 3) require the development and approval of substitutes for CFCs and HCFCs.

What You Can Do

- To protect the ozone layer, make sure that technicians working on your car air conditioner, home air conditioner, or refrigerator recover the refrigerant. The technician should be certified and use certified recovery equipment.
- Have your car and home air conditioner units and refrigerator checked for leaks. When possible, repair leaky air conditioners before refilling them.
- Properly dispose of refrigeration or air conditioning equipment.
- Protect yourself against intense sunburn. Wear UV screening sunglasses and hats in order to shield yourself from harmful UV rays. Apply sunscreen, especially if you have light complexion.

For more information, contact the EPA Stratospheric Ozone Information Hotline at 800-296-1996.